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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/917,904	07/31/2001	Bryan Elwood	114300.2140	1150
30734	7590	12/01/2004	EXAMINER	
BAKER + HOSTETLER LLP WASHINGTON SQUARE, SUITE 1100 1050 CONNECTICUT AVE. N.W. WASHINGTON, DC 20036-5304			WEST, JEFFREY R	
			ART UNIT	PAPER NUMBER
			2857	

DATE MAILED: 12/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 09/917,904	Applicant(s) ELWOOD ET AL.	
	Examiner Jeffrey R. West	Art Unit 2857	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 20 September 2004.
- 2a) ☐ This action is FINAL.      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 4-17 and 21-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 4-17 and 21-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Objections*

1. Claims 10, 14-17, 22, 23, 27 and 28 are objected to because of the following informalities:

In claim 10, line 10, "its respective maximum" should be ---a respective maximum---.

In claim 10, line 13, "hour count and stored" should be ---hour count stored---.

In claim 10, line 15, "indicating failure" should be ---predicting failure---.

In claim 14, line 2, "adjusts a percentage" should be ---adjusts the percentage---.

In claim 15, line 3, "their respective" should be ---said respective---.

In claim 16, line 1, "said gas sensor" should be ---the at least one gas sensor---.

In claim 17, line 1, "said gas sensor" should be ---the at least one gas sensor---.

In claim 22, line 2, "an embedded controller" should be ---said embedded controller---.

In claim 23, line 2, "an embedded controller" should be ---said embedded controller---.

In claim 27, line 9, "its respective maximum" should be ---a respective maximum---.

In claim 27, lines 13-14, "hour count and stored" should be ---hour count stored---

In claim 28, line 8, "its respective maximum" should be ---a respective maximum---.

In claim 28, line 10, "lifetime hours every hour" should be ---lifetime hours measurement every hour---.

In claim 28, line 12, "hour count and stored" should be ---hour count stored---.

In claim 28, line 15, "the at least one respective maximum" should be ---said respective maximum---.

In claim 28, line 16, "said gas sensor" should be ---the at least one gas sensor---.

Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 5-7, 10-17 and 22-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,701,415 to Dutton et al. in view of JP Publication No. 08-233770 to Hatai and further in view of U.S. Patent No. 3,950,985 to Buchwald et al.

Dutton discloses a controlled gas atmosphere incubator (column 4, lines 26-30) with a carbon dioxide sensor and an oxygen sensor disposed therein (column 7, lines 30-37 and 64-67) and an embedded controller that accesses a plurality of set points/values (column 10, lines 3-10) and monitors the set points/values for

temperature and gas concentration changes to determine a failure condition (column 11, lines 19-45), wherein upon the occurrence of a failure condition, a re-settable alarm interface display is activated to indicate the failure condition to a user (column 11, line 45-49 and column 12, lines 11-16). Dutton also discloses a cumulative clock (i.e. timer) in the controller for use in the main testing operation (column 11, lines 10-18).

As noted above, Dutton teaches many of the features of the claimed invention. Dutton, however, discloses a general method for testing the operation of an incubator using oxygen and carbon dioxide sensors but does not provide a method for testing/predicting the life of the sensors themselves.

Hatai teaches an electrochemical gas sensor and a corresponding method for analyzing the gas sensor for lifetime adjustment values, at predetermined sensor operation time intervals determined by a clock, comprising obtaining lifetime data from the sensor, adjusting the lifetime data obtained based up a stored calculation rule, and comparing the adjusted lifetime data to predetermined thresholds (0013) in order to display warning results to a user in the form of deterioration indications of the sensor (i.e. predetermined values of no deterioration) (abstract). Hatai also teaches performing the adjusting with the calculation rule according to data stored in a look-up table of temperatures ranging from -10 to 50 degrees Celsius, including 20 degrees Celsius, (0015-0018) and further, since Hatai teaches determining the time when the adjusted sensor value has reaches a half deterioration (0020) it is

considered inherent that the adjusted sensor value must be compared to its previous maximum value in order to determine when it reaches this point.

It would have been obvious to one having ordinary skill in the art to modify the invention of Dutton to include a method for testing/predicting the life of the sensors themselves, as taught by Hatai, because Hatai suggests that the combination would have provided the user a way to avoid complete failure of the sensors, thereby giving the user time to replace the sensors, by notifying the user of the lifetime by detecting the deterioration of sensitivity easily and accurately (abstract).

While the invention of Dutton and Hatai doesn't specifically disclose performing the adjusting operation every hour, the combination does teach that the adjusting step should be set up at intervals corresponding to the actual environment of the sensor (Hatai, 0022). Therefore, it would have been obvious to one having ordinary skill in the art to specify that the adjusting step be executed hourly if this interval provided suitable accuracy for the current environment.

Further, although the combination of Dutton and Hatai doesn't specifically disclose that the life values are in the form of percentage hours, this limitation is not considered critical to the patentability of the invention since it would have been obvious to one having ordinary skill in the art to express the data in any form desired. Further, as indicated by the cited documents below, the Examiner takes Official Notice that it is well known in the art to determine the life of gas sensors in the form of percentage hours.

As noted above, the invention of Dutton and Hatai teaches many of the features of the claimed invention and while the invention of Dutton and Hatai does disclose adjusting the sensor life values based upon data stored in a table at a temperature of 20 degrees Celsius, the combination does not specifically disclose normalizing the remaining useful life to an hour count stored at a specified temperature, such as the 20 degrees Celsius.

Buchwald teaches an improved method for monitoring the service life of components (column 1, lines 8-10) including means for obtaining a remaining service life (column 2, line 64 to column 3, line 9) and normalizing the remaining service life to an hour count stored at a specified temperature (column 1, lines 31-35 and column 3, lines 48-62) wherein the components are under constant stress and temperature (column 4, lines 1-3).

It would have been obvious to one having ordinary skill in the art to modify the invention of Dutton and Hatai to include normalizing the remaining useful life to an hour count stored at a specified temperature, such as the 20 degrees Celsius, as taught by Buchwald, because, as suggested by Buchwald, the combination would have reduced the burden of the user in determining a remaining useful life by using a simplified look-up operation of a graph as well as obtained an accurate remaining useful life by determining the life with respect to design specifications corresponding to the constant stress and temperature conditions (column 2, line 64 to column 3, line 9).

4. Claims 4, 8, 9, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dutton in view of Hatai and Buchwald, and further in view of U.S. Patent No. 5,741,413 to Capetanopoulos.

As noted above, Dutton in combination with Hatai and Buchwald teaches all of the features of the claimed invention except for holding a gas concentration and temperature constant over a previous hour before normalizing.

Capetanopoulos teaches a gas sensor and method of use as well as a method for calibrating/normalizing the gas sensor wherein prior to calibrating/normalizing the gas sensor, a gas concentration and temperature is held constant over a time interval (column 2, lines 46-57).

It would have been obvious to one having ordinary skill in the art to modify the invention of Dutton, Hatai, and Buchwald to include holding a gas concentration and temperature constant over a previous hour before normalizing, as taught by Capetanopoulos, because the combination of Dutton, Hatai, and Buchwald does disclose that the normalization is only accurate over periods of constant stress and temperature (Buchwald, column 4, lines 1-3), and Capetanopoulos suggests that the combination would have provided a method for obtaining a constant output from the sensor thereby improving the accuracy of the normalization step by insuring that differences in the gas concentration/temperature do not skew the sensor readings (column 2, lines 46-57).

Further, Capetanopoulos suggests that it is well known that gas sensors need various amounts of time to accurately reflect the conditions of the environment



(column 2, lines 7-14 and column 14-26) and therefore it would have been obvious to one having ordinary skill in the art to hold the gas concentration and temperature constant for whatever time is deemed necessary, such as one hour, to stabilize the readings.

### ***Response to Arguments***

5. Applicant's arguments with respect to claims 4-17 and 21-28 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure:

U.S. Patent No. 6,490,543 to Jaw teaches a lifeometer for measuring and displaying life systems/parts including means for tracking data under unchanged conditions and using a rate of usage and amount of time operated to calculate present usage, operating history, and life expectancy information to determine and calculate used life and/or life remaining.

U.S. Patent No. 6,349,268 to Ketonen et al. teaches a method and apparatus for providing a real time estimate of a life time for critical components in a communication system including sensing a temperature of a device, recording temperatures of the device at a plurality of time intervals, determining life time points of the device corresponding to the temperatures, calculating accumulated life time

points of the device for the time intervals, and predicting a life time for the device based on the accumulated life time points.

U.S. Patent No. 6,279,377 to Cao teaches a method and apparatus for monitoring oxygen concentration including an oxygen concentration sensor, processor, display (column 3, lines 43-58) and re-settable alarm (column 5, lines 50-67). Cao also teaches calibrating the monitoring device according to a table having oxygen concentration values, which are a function of pressure and temperature, wherein in order to perform calibration the actual output of the sensors are normalized to expected values defined in the table (column 7, lines 11-28).

U.S. Patent No. 5,736,930 to Cappels teaches an apparatus and method for radiation source failure predication with the data normalized based on its operating time.

Apogee, "Oxygen Sensor (Model O2S)" teaches an oxygen sensor having a life expectancy expressed in percent-hours.

General Monitors, "G-Series Portables" teaches a multi-gas sensor that indicates the remaining life of the sensor in 0-100 percent-life.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey R. West whose telephone number is (703)308-1309. The examiner can normally be reached on Monday through Friday, 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on (703)308-1677. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-7382 for regular communications and (703)308-7382 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

jrww  
November 28, 2004

  
MARC S. HOFF  
SUPERVISORY PATENT EXAMINER  
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